

# Target Missouri II:

A Regional Approach to Economic  
Development

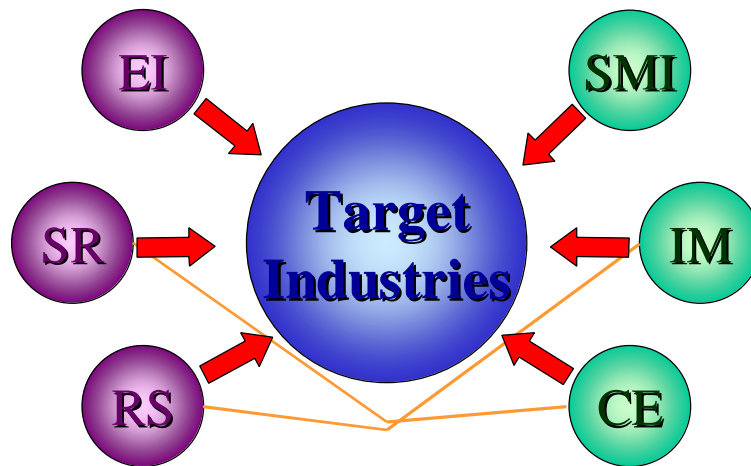
*Kansas City*

**TM<sup>2</sup>**

## Executive Summary

*“Developing a comprehensive plan to begin the twenty-first century with a strong and growing economy.”* This was the goal of the original Target Missouri program initiated by the Department of Economic Development (DED) in 1996. Target Missouri II (TM2) is similar in nature to the original initiative. TM2 approaches the issue of identifying priority industries from the perspective that *different industries affect different regions differently*.

Six analysis tools are used to determine which industries should be chosen for targeting in a given region. The first two, Specialization Ratios (SR) and the Regional Shift (RS) component of Shift-Share Analysis (SSA), help to determine which industries might have a competitive advantage in a region. The third and most important type, the Economic Impact (EI) analysis, helps to identify which industries will benefit the region most should they expand. The Skills-Mismatch Index (SMI) determines whether the skills of the available workforce in a region match the needed skills for a particular industry. The Industrial Mix (IM) component of SSA helps to identify emerging industries. Finally, the Current Employment (CE) level of a regional industry helps to determine whether needed infrastructure is in place to attract particular industries and is an important factor when considering SRs. Industries are awarded points on a scale of 0 to 100 based on whether they meet necessary criteria in these six categories. Those industries that score the highest are those recommended for targeting. The graphic below illustrates these ideas.



The recommendations of TM2 and the original Target Missouri study are, in fact, similar. However, by focusing solely on Kansas City, TM2 has provided a list of industries that specifically matches the potential of Kansas City.

The tables that follow present those industries with scores of 50 or higher on the target scale for Kansas City. No industry scored a perfect 100 points in the city. Drugs (SIC 283) and Misc. Chemicals (289) each scored 95 points, along with Concrete Products

(327). Surprisingly, Motor Vehicles and Equipment Mfg. (371) scored only 55 points. This industry had consistently scored at the top for each region previously surveyed. Another ten industries (of the 84 total) scored 80 points or higher, while 50 of these scored the minimum 50 points.

Other interesting findings are related to the Life Sciences Industries in Kansas City. Of these, only the Drug Industry has a strong presence in the City. Other life science-manufacturing industries have high potential economic impact and a good skills match with the City's workforce, but a relatively weak presence. *This implies that Kansas City is ripe for development in areas such as Industrial Chemicals (286), Medical Instruments (384), and Agricultural Chemicals (287).* Similarly, the Transportation Manufacturing industry also has high potential in the City.

TM2 has provided a list of 84 industries that have the best potential for economic development in Kansas City. The original Target Missouri provided a list of only 34 target industries for the entire Kansas City Metro Region. Of these, only 22 appear on both lists, so in this case, the two studies have obtained somewhat different results. The expanded list generated by TM2 provides a list of industries that better fits the specifics of Kansas City, as well as providing rankings that shed some light on the relative importance of certain industries.

Kansas City Target Industries		
SIC	Industry	Total Score
283	Drugs	95
327	Concrete, gypsum, & plaster products	95
289	Miscellaneous chemical products	95
267	Converted paper products except containers	90
285	Paints and allied products	90
40	Railroad	90
473,474,478	Miscellaneous transportation services	85
491,%493	Electric utilities	85
492,%493	Gas utilities	85
494-497,%493	Water and sanitation	85
63	Insurance carriers	85
64	Insurance agents, brokers, and services	85
50,51	Wholesale trade	85
45	Air Transportation	75
251	Household furniture	70
331	Blast furnaces and basic steel products	70
341	Metal cans and shipping containers	70
374	Railroad equipment	70
239	Miscellaneous fabricated textile products	70
272	Periodicals	70
295,299	Miscellaneous petroleum and coal products	70
751	Automotive rentals, without drivers	70
48	Communications	65
60	Depository institutions	65
62	Security and commodity brokers	65
792	Producers, orchestras, and entertainers	60
791,799	Amusement and recreation services, nec	60
243	Millwork, plywood, and structural members	55
254	Partitions and fixtures	55
252,253,259	Office and misc. furniture and fixtures	55
371	Motor vehicles and equipment	55
265	Paperboard containers and boxes	55
42	Trucking	55
794	Commercial sports	55

Kansas City Target Industries		
SIC	Industry	Total Score
321-323	Glass and glass products	50
324	Hydraulic cement	50
333	Primary nonferrous smelting & refining	50
334,339	All other primary metals	50
335	Nonferrous rolling and drawing	50
342	Cutlery, hand tools, and hardware	50
345	Screw machine products, bolts, rivets, etc.	50
346	Metal forgings and stampings	50
348	Ordnance and ammunition	50
349	Miscellaneous fabricated metal products	50
351	Engines and turbines	50
352	Farm and garden machinery and equipment	50
353	Construction and related machinery	50
355	Special industry machinery	50
356	General industrial machinery and equipment	50
357	Computer and office equipment	50
358	Refrigeration and service industry machinery	50
366	Communications equipment	50
367	Electronic components and accessories	50
372,376	Aerospace	50
373	Ship and boat building and repairing	50
375,379	Miscellaneous transportation equipment	50
381	Search and navigation equipment	50
384	Medical equipment, instruments and supplies	50
386	Photographic equipment and supplies	50
387	Watches, clocks, and parts	50
201	Meat products	50
202	Dairy products	50
203	Preserved fruits and vegetables	50
204,207	Grain mill products and fats and oils	50
206	Sugar and confectionery products	50
208	Beverages	50
209	Miscellaneous food and kindred products	50
21	Tobacco products	50
221-224,226,228	Weaving, finishing, yarn, and thread mills	50
225	Knitting mills	50
227	Carpets and rugs	50
229	Miscellaneous textile goods	50
261-263	Pulp, paper, and paperboard mills	50
273	Books	50
281,286	Industrial chemicals	50
282	Plastics materials and synthetics	50
284	Soap, cleaners, and toilet goods	50
287	Agricultural chemicals	50
291	Petroleum refining	50
301	Tires and inner tubes	50
308	Miscellaneous plastics products, nec	50
472	Passenger transportation arrangement	50
781-783	Motion pictures	50
871	Engineering and architectural services	50

***Target Missouri II:***  
***A Regional Approach to Economic Development***  
**Kansas City**

- I. Introduction**
  - A. Target Missouri
  - B. Regions in Missouri
  - C. Kansas City Region
- II. Analysis of Industries in Kansas City**
  - A. Conceptual Model of Data Analysis for TM2
  - B. Specialization Ratios
  - C. Regional Shifts
  - D. Economic Impacts by Industry
  - E. Skill-Mismatch Index
  - F. Industrial Mix
  - G. Current Employment Levels
- III. Determining Target Industries**
  - A. Conditions for Targets
  - B. Kansas City Target Industries
  - C. Locations of Target Industries
  - D. Comparison of Target Missouri and TM2
- IV. Limitations of Analysis**
- V. Future Considerations**
- VI. Appendices**
  - A. Information Concerning the REMI Model
  - B. Specialization Ratios for All Industries
  - C. Kansas City Shift Share Analysis
  - D. Economic Impacts of 100 New Jobs in Specific Industries
  - E. Economic Impact Scores Sorted by Average Score
  - F. Skills Mismatch Index for Kansas City Industries
  - G. Target Scores for All Kansas City Industries

## **I. Introduction**

### **A. Target Missouri**

*“Developing a comprehensive plan to begin the twenty-first century with a strong and growing economy.”* This was the goal of the original Target Missouri program initiated by the Department of Economic Development (DED) in 1996. DED contracted with the Midwest Research Institute of Kansas City, who identified nine related-industry categories, or “clusters”, that will be key to Missouri’s economy in the coming years. These clusters include business and financial services, chemicals and materials, electronics and electronic equipment, health products and services, information and media, food products, paper products, transportation equipment, and tourism. These clusters have since been combined into the following categories: advanced manufacturing, agribusiness, biotechnology, financial services, information and media, transportation services, and tourism.

Officials from DED then met with community and business leaders throughout the state to determine ways to improve the state’s economic infrastructure to provide an environment suitable for the attraction and expansion of industries within the identified clusters. Economic infrastructure includes such things as workforce, highways, telecommunications, technology, capital, taxation, regulations, and quality of life. These meetings provided priority issues that DED is addressing while devising future development plans.

Target Missouri II is similar in nature to the original Target Missouri initiative. Although Target Missouri II (TM2) is meant to be an update to its predecessor and the analysis methods are similar in some regards, TM2 approaches the issue of identifying priority industries from the perspective that *different industries affect different regions differently*. The Target Missouri program, using specialization ratios, identified industries that best fit the state. After using these ratios to identify clusters, MRI determined which, of these clusters could be supported by the individual regions within the state. This is a “top-down” approach. TM2 also uses specialization ratios, but combines them with shift-share analysis, an emphasis on economic impact, and a consideration for the current capacity of the workforce. Further, TM2 focuses on each of the fifteen regions in Missouri (the original Target Missouri included only eight). At the completion of the fifteen individual studies, the results are aggregated to make recommendations as to the best plan for future development in the state. This is a “bottom-up” approach.

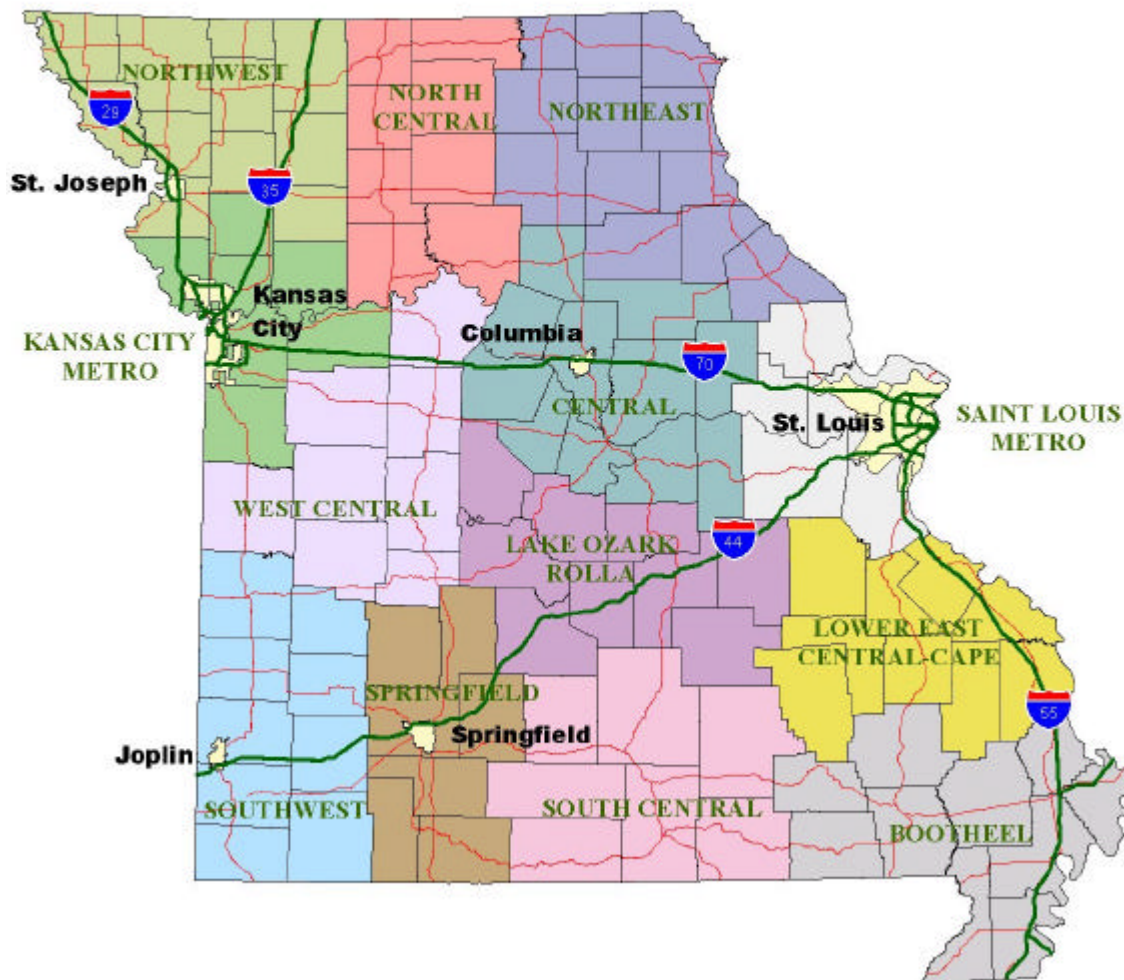
### **B. Regions in Missouri**

The state of Missouri is a diverse state, so diverse that it is often referred to as a microcosm of the nation as a whole. Missouri includes both sprawling urban areas and seemingly empty rural areas. Regions within the state depend on many different industries to support their economies, ranging from advanced manufacturing and information technology to basic farming. Topography and geography also vary across



the state, from the smooth glacial plains in the north to the rugged Ozarks in the southwest to the Mississippi delta region in the Bootheel. Access to transportation also varies across the state, with some areas having access to highways, rivers, and airports, while others are rather isolated.

## MISSOURI ECONOMIC REGIONS

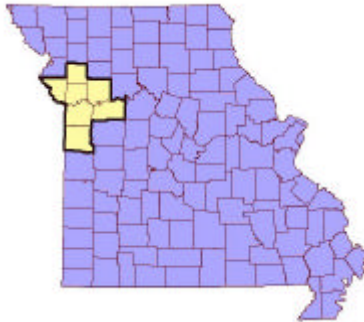


Based on these ideas, Missouri was broken into fifteen economic regions. These regions were originally based on commuting patterns with some being modified to match current Census Bureau definitions of certain metropolitan areas. The fifteen regions, shown in the map above, include: Bootheel, Central, Kansas City, Kansas City Metro, Lower East



Central-Cape, Lake Ozark-Rolla, North Central, Northeast, Northwest, St. Louis, St. Louis Metro, Springfield, South Central, Southwest, and West Central.

### **C. Kansas City Region**



The economy of the Kansas City Metro Region generally keeps pace with the economy of Missouri as a whole. There has been a varied amount of economic growth in this region during the last ten years, with Cass and Platte Counties seeing good progress, while urban areas in Jackson County are growing at a slower pace. The population growth since 1990 in the Kansas City Metro Region was 8.7%, compared to 6.7% for the state. The poverty rate for this area is 10.4%. This compares with 12.4% for the state as a whole. The unemployment rate during 2000 for the Kansas City Metro Region was 3.3%, slightly lower than the state's rate of 3.5%. The growth in personal income and per capita income in the Kansas City Metro Region over the past decade is nearly equivalent to the growth of the state as a whole. However, per capita income in the region was \$26,073 during 1998, slightly more than the state average of \$25,150.

#### **Some of the large employers in this region include:**

- ABC Media, Inc.
- AT&T Corp.
- The Bendix Division
- Cameron Community Hospital
- Children's Mercy Hospital
- Ford Motor Co.
- Hallmark Cards
- Harrah's-North Kansas City Corp.
- Higginsville Habilitation Center
- Orbseal LLC
- Research Medical Center
- St. Luke's Hospital of Kansas City
- Station Casino Kansas City
- Trans World Airlines, Inc.
- UMB Bank
- US Post Office
- University of Missouri
- Wal-Mart Associates, Inc

# Kansas City Region



The two largest industries by employment in the region are Services (28.3%) and Trade (23.5%). Over 70% of the employment in these industries is concentrated in Jackson County. Government accounts for just over 15% of the region's employment. Jackson County also accounts for over 65% of employment in Manufacturing (12.0%), the third largest private industry. These figures are from ES-202 data.

The annual unemployment average for the area during 2000 was 3.2%. For counties in the region had unemployment rates below 3%, while Ray County (4.2%) was the only county higher than 4%. Total labor force for the region is estimated to be about 613,848.

## II. Analysis of Industries in Kansas City

### A. Conceptual Model of Data Analysis for TM2

Six analysis tools are used to determine which industries should be chosen for targeting in a given region. The first two, Specialization Ratios (SR) and the Regional Shift (RS) component of Shift-Share Analysis (SSA), help to determine which industries might have a competitive advantage in a region. The third and most important type, the Economic Impact (EI) analysis, helps to identify which industries will benefit the region most should they expand. The Skills-Mismatch Index (SMI) determines whether the skills of the available workforce in a region match the needed skills for a particular industry. The Industrial Mix (IM) component of SSA helps to identify emerging industries. Finally, the Current Employment (CE) level of a regional industry helps to determine whether needed infrastructure is in place to attract particular industries and is an important factor when considering SRs. Industries are awarded points on a scale of 0 to 100 based on whether they meet necessary criteria in these six categories. Those industries that score the highest are those recommended for targeting. The diagram below presents a graphic illustration of this methodology. The orange lines connect those factors that have a specific relationship as described above.





## B. Specialization Ratios

Specialization Ratios (SR) are a simple economic development tool. SRs help to identify what are known as "basic" and "non-basic" industries in the local economy. Basic industries are those which draw money into the economy from outside the region, while non-basic or service-producing industries serve the needs of the local populace and businesses within its borders. SRs evaluate the degree that a region specializes in a certain industry by comparing two ratios: the ratio of employment within the industry in the region to total regional employment; and the ratio of employment within the industry nationally to total nation employment. In other words, it measures the degree to which an area specializes in an industry relative to the nation.

The formula for an SR is as follows:

$$SR_i = \frac{E_{ir} / E_r}{E_{in} / E_n}$$

where:

- $SR_i$  = Specialization Ratio for the Industry
- $E_{ir}$  = Employment in the Industry in the Region
- $E_r$  = Employment in the Region
- $E_{in}$  = Employment in the Industry in the Nation
- $E_n$  = Employment in the Nation

An  $SR = 1$  indicates the percentage of regional employment in the industry is the same as the percentage of national employment in the industry. An  $SR > 1$  indicates a high concentration of employment in an industry in a region, which thus implies a competitive advantage for that industry there.

SRs have several advantages and disadvantages. They are extremely simple to calculate and interpreting them is straightforward. However, a high SR does not necessarily indicate a significant level of employment.

To calculate SRs for Kansas City, baseline employment data from REMI Policy Insight (REMI) Multi-Region Model for Missouri for the year 1998 was used. (Appendix B contains information about the REMI model.) Baseline employment data is broken down into 170 sectors in the REMI model. The table below presents the industries with the highest SRs in Kansas City. Appendix B presents the SRs for all industries.

Specialization Ratios in Kansas City			
SIC	Industry	Employment	SR
289	Miscellaneous chemical products	2,519	9.10
341	Metal cans and shipping containers	783	6.83
285	Paints and allied products	700	4.39
283	Drugs	2,964	3.70
347	Metal coating, engraving, and allied services	1,451	3.54
271	Newspapers	5,104	3.50
279	Service industries for the printing trade	584	3.33
272	Periodicals	1,401	3.06
275-276	Commercial printing and business forms	5,531	2.68
492,%493	Gas utilities	1,430	2.64
48	Communications	11,854	2.52
344	Fabricated structural metal products	3,350	2.37
265	Paperboard containers and boxes	1,555	2.33
61,67	Nondepository; holding and investment offices	8,533	2.31
871	Engineering and architectural services	9,976	2.30
472	Passenger transportation arrangement	1,945	2.22
734	Services to buildings	9,003	2.04

### C. Regional Shifts

While SRs provide a method of looking at data statically, or at one point in time, Shift-Share Analysis (SSA) provides a method of looking at data dynamically, or how it has changed over time.

To complete the SSA, the same 170-sector employment data used for the SR section was again used. Since the SSA looks at change over time, data for the year 1993 was used as the baseline year. SSA decomposes regional change to show what part of growth is due to national trends, and what part of growth is specific to the region. SSA breaks the change into three parts: national share, industry mix, and regional shift. The national share (NS) is the expected change in employment in the industry if the region grew at the same rate as the nation. The industry mix (IM) measures the extent to which the region specializes in industries that are fast- (or slow-) growing industries at the national level. The regional shift (RS) measures the relative performance of a regional industry.

For TM2, SSA is used as a method of analyzing employment growth in the region from 1993 to 1998. SSA can also be applied to data concerning wages or output.

The Shift-Share Identity is the following equation:

$$E_t - E_{t-1} = NS + IM + RS$$

where:

$E_t$	= final year (1998)
$E_{t-1}$	= base year (1993)
NS	= $g_n E_{ir(1993)}$
IM	= $(g_{in} - g_n) E_{ir}$
RS	= $(g_{ir} - g_{in}) E_{ir}$
$g$	= growth rate
$i$	= industry
$r$	= region
$n$	= nation

The figure for NS provides little information. A positive IM indicates that the industry is fast-growing at the national level. The RS is the most interesting number for the purposes of TM2. A positive RS is believed to indicate a possible competitive advantage for that industry in the region, for it has seen growth above what is expected due to national trends. When combined with a positive IM, a positive RS might indicate an emerging sector or a target with potential.

Like SRs, SSA has both advantages and disadvantages. SSA is simple to use and to interpret. However, it does not identify factors causing growth, nor does it reflect the capacity of a region to grow. In other words, SSA indicates “what” happened but not “why” it occurred.

To calculate the RSs for Kansas City, baseline employment data from REMI for the years 1993 and 1998 in the 170 sectors was used. The table on the following page presents those industries with a large positive RS. Appendix C presents the RS for all industries.

#### **D. Economic Impacts by Industry**

Perhaps the most important question addressed by TM2 is “Which industry, if it expands in the region, will have the greatest economic impact?” Alternatively, from the perspective of potential policy-making, the question might be “Which industry will have the biggest bang for the buck?”

The Regional Shifts provided by Shift-Share Analysis provide a snapshot of how the industrial mix changed over time. The Specialization Ratios give an indication of the current industry mix. The Economic Impact (EI) section provides a look into the future.



Kansas City Shift Share Analysis 1993-1998					
SIC	Industry	NS	IM	RS	Total
52-57,59	Rest of Retail	3,974	752	7,311	12,037
15-17	Construction	1,502	1,103	4,767	7,372
791,799	Amusement and recreation services, nec	432	760	3,557	4,749
50,51	Wholesale trade	3,166	-322	3,543	6,387
792	Producers, orchestras, and entertainers	84	39	612	736
42	Trucking	1,105	-692	537	950
243	Millwork, plywood, and structural members	65	39	356	460
794	Commercial sports	43	70	351	465
472	Passenger transportation arrangement	172	77	321	570
781-783	Motion pictures	104	255	270	628
283	Drugs	336	-270	208	274
254	Partitions and fixtures	38	43	205	286
63	Insurance carriers	1,005	-654	200	551
252,253,259	Office and misc. furniture and fixtures	42	1	198	241
289	Miscellaneous chemical products	290	-274	176	193
473,474,478	Miscellaneous transportation services	82	140	175	397
871	Engineering and architectural services	1,024	625	120	1,769
81	Legal services	1,016	-430	107	693
231-238	Apparel	47	-138	97	5
793	Bowling centers	16	-18	94	92
64	Insurance agents, brokers, and services	440	-169	90	361
40	Railroad	149	-242	83	-9
327	Concrete, gypsum, & plaster products	61	7	75	143
784	Video tape rental	30	39	68	137
872,879	Accounting, auditing, and other services	548	-75	60	533
251	Household furniture	13	-17	54	50
491,%493	Electric utilities	246	-462	52	-163
285	Paints and allied products	87	-137	50	0

A primary issue to be addressed here is the definition of economic impact. Economic impact generally means the total multiplying effect due to the introduction of new jobs in a region. Depending on the purpose of the study being done, EI can indicate total jobs created, total salary gained, total output created, total state or local revenue created, or a myriad of other possible variables and their combinations. Since no one variable is any better than another, two indices, a regional index and a state index, have been created for TM2 combining five different indicators. Both indices attempt to measure the relative impacts of 100 new jobs in each of 49 individual industrial sectors using the REMI model.<sup>1</sup> The 49 individual sectors are an aggregated version of the 170 sectors used in the SR and RS analyses. Only these 49 sectors are analyzed due to the limitations of the REMI model.

The Regional Index combines the Employment Impact and the Total Wage and Salary Impact *within the region*. The dynamic forecasting capabilities of the REMI model provide not only forecasts for the immediate year, but also up to thirty-five years into the future. Since some industries have a varying degree of impact in any given year, the

<sup>1</sup> For the purposes of EI, the Farm sector and the three Government sectors were not included, being outside DED's scope of work.

average employment impact over the first five years was taken as the Employment impact of the 100 new jobs in each individual industry. For similar reasons, the net present value of the total wage and salary impact over the first five years was taken as the Wage and Salary Impact.

Because it is impossible to combine these two scores in any straightforward manner, the two scores were normalized, or given a z-score, within their respective categories. The formula for a z-score is the standard normalization formula:

$$Z_i = \frac{(X_i - \mu)}{s}$$

where:

$Z_i$  = z-score of a value

$X_i$  = actual value

$\mu$  = mean of all values

$s$  = standard deviation of all values

The z-scores for Employment and Wage were then averaged to determine the Average Score. **The industries with the highest Average Scores are the industries that have the highest potential EI within the region.**

Since the scores are normalized, scores of zero do not indicate that there is no economic impact. Rather, a score of zero indicates an impact that is about average for all of the industries within that region. Similarly, a negative score indicates an impact that is below average. Scores with a magnitude greater than 1 indicate a relatively large economic impact.

The State Index combines three variables in an analogous fashion. These variables are Employment Impact, Wage and Salary Impact, and State Fiscal Revenue Impact, *at the statewide level*. However, for the purposes of this Central Region study, only the Regional Index shall be considered.

The table on the following page presents the EIs of selected manufacturing industries in Kansas City. For instance, 100 new jobs in the Furniture Manufacturing Industry would lead to a total of 141 new jobs and over \$23 million in new wages for the city. The second table indicates that this is a relatively low economic impact. On the other hand, 100 new jobs in Primary Metals leads to relatively high impact. The third table presents those industries with the highest economic impact in Kansas City. Appendices D & E present the EI scores for all industries in Kansas City.

Economic Impact of 100 New Jobs in Specific Industries				
Kansas City				
Industry Group			Regional Impact	
SIC	Sector	Average Annual Salary	Employment	Wages and Salaries
24	Lumber	\$21,335	123	\$16,372,944
25	Furniture	\$34,974	141	\$23,622,099
32	Stone,Clay,Etc	\$38,840	183	\$31,970,038
33	Primary Metals	\$45,701	191	\$37,121,064
34	Fabricated Metals	\$42,345	174	\$32,243,503
35	Machinery & Computers	\$42,464	190	\$35,937,952

Impact Z-Scores by Industry				
Kansas City				
Industry Group		Regional Impact		
SIC	Sector	Total Employment	Wages and Salaries	Average Score
24	Lumber	-0.80	-0.85	<b>-0.83</b>
25	Furniture	-0.44	-0.34	<b>-0.39</b>
32	Stone,Clay,Etc	0.37	0.25	<b>0.31</b>
33	Primary Metals	0.52	0.62	<b>0.57</b>
34	Fabricated Metals	0.19	0.27	<b>0.23</b>
35	Machinery & Computers	0.49	0.53	<b>0.51</b>

Impact Z-Scores by Industry				
Kansas City				
Industry Group		Regional Impact		
SIC	Sector	Total Employment	Wages and Salaries	Average Score
29	Petroleum Products	3.40	2.66	<b>3.03</b>
28	Chemicals	2.90	2.99	<b>2.94</b>
49	Public Utilities	2.38	2.20	<b>2.29</b>
40	Railroad	1.54	1.88	<b>1.71</b>
371	Motor Vehicles	1.73	1.66	<b>1.69</b>
48	Communications	1.07	1.21	<b>1.14</b>
60	Banking	0.95	0.80	<b>0.87</b>
372-379	Rest of Transportation Equipment	0.36	1.12	<b>0.74</b>
75	Auto Repair, Service	0.99	0.16	<b>0.58</b>
33	Primary Metals	0.52	0.62	<b>0.57</b>
35	Machinery & Computers	0.49	0.53	<b>0.51</b>
63,64	Insurance	0.50	0.45	<b>0.48</b>

## E. Skills-Mismatch Index

The skill level of the workforce is an important factor in determining which industries should be targeted. Different industries require different labor skills for them to be successful. High-skill firms may not wish to locate in an area with a poorly educated workforce where qualified employees are difficult to find. Low-skill firms may not wish to locate in a highly educated area since they may have to pay higher wages.

One method to measure the disparity between the demand of each skill level of an industry and the supply of each skill level in the region is by using the Skill-Mismatch Index (SMI). Higher SMI values represent a greater mismatch of labor force skills for the industry in the region.

The SMI is calculated by taking the difference between the industry skill “demand” minus the region skill “supply”. Industry skill demand is defined as the average proportion of high-, semi-, and low-skilled workers within an industry using data from the Career Guide to Industries, U.S. Department of Labor (DOL). The nine DOL occupational classifications were collapsed into three categories that reflect, as much as possible, the amount of training and education required to perform that occupation. From this, the percentage of workers for each skill level was calculated by industry and was used to represent industry skill demand.

<b><i>Skill Level</i></b>	<b><i>DOL Occupational Classes</i></b>	<b><i>US Census Educational Attainment</i></b>
<b><i>High</i></b>	1 – Executive, Administrative, and Managerial 2 – Professional Specialty	Graduate or Professional Degree. Bachelor’s Degree.
<b><i>Semi</i></b>	3 – Technicians and Related Support 4 – Marketing and Sales Occupations 5 – Administrative Support, Including Clerical 6 – Precision Production, Craft, and Repair	Associate’s Degree. Some college, no degree.
<b><i>Low</i></b>	7 – Service 8 – Agriculture, Forestry, and Fishing 9 – Operators, Fabricators, and Laborers	High School Diploma/GED. Less than high school education.

County skill supply was determined using educational attainment data from the U.S. Census Bureau and projected to 1999 by Easy Analytical Software, Inc. Citizens over the age of 25 with a high school degree or less are considered low-skill. Those with some college or an Associate’s degree are considered semi-skilled. Those with at least a Bachelor’s degree are considered high-skilled.

The formula for SMI is as follows:

$$SMI_{\text{industry}} = \sum_{j=1}^3 (S_j - M_{ij})^2$$

where:

$j$  = skill level (1=High; 2=Semi; 3=Low)

$S_j$  = Percent of County Population with skill level  $j$

$M_{ij}$  = Percent of workers in industry  $i$  with skill level  $j$

It is important to note that a high mismatch between skills demanded and supplied does not necessarily imply the region has poor educational levels. It simply implies that skills of the available workforce in the region do not match that industry well.

The table below shows the SMI for selected industries in Kansas City. Appendix F provides the SMI for those industries with significant economic impact or competitive advantage.

Kansas City Skills Mismatch Index		
SIC	Industry	SMI
792	Producers, orchestras, and entertainers	7
793	Bowling centers	7
794	Commercial sports	7
791,799	Amusement and recreation services, nec	7
351	Engines and turbines	18
352	Farm and garden machinery and equipment	18
353	Construction and related machinery	18
354	Metalworking machinery and equipment	18
355	Special industry machinery	18
356	General industrial machinery and equipment	18
357	Computer and office equipment	18
358	Refrigeration and service industry machinery	18
359	Industrial machinery, nec	18
21	Tobacco products	31
371	Motor vehicles and equipment	50
373	Ship and boat building and repairing	50
374	Railroad equipment	50
381	Search and navigation equipment	50
382	Measuring and controlling devices	50
384	Medical equipment, instruments and supplies	50
385	Ophthalmic goods	50
386	Photographic equipment and supplies	50
387	Watches, clocks, and parts	50
372,376	Aerospace	50
375,379	Miscellaneous transportation equipment	50

## F. Industrial Mix

The Industrial Mix (IM) is the second component of the Shift-Share Analysis described earlier. As was mentioned during the discussion of SSA, a positive IM component indicates a fast-growing industry at the national level. When combined, a positive RS and a positive IM indicate a potential target industry. The table below indicates those industries in Kansas City that meet these two conditions. Appendix C presents the Shift-Share Analysis for all industries in Kansas City.

Kansas City Shift Share Analysis 1993-1998					
SIC	Industry	NS	IM	RS	Total
52-57,59	Rest of Retail	3,974	752	7,311	12,037
15-17	Construction	1,502	1,103	4,767	7,372
791,799	Amusement and recreation services, nec	432	760	3,557	4,749
792	Producers, orchestras, and entertainers	84	39	612	736
243	Millwork, plywood, and structural members	65	39	356	460
794	Commercial sports	43	70	351	465
472	Passenger transportation arrangement	172	77	321	570
781-783	Motion pictures	104	255	270	628
254	Partitions and fixtures	38	43	205	286
252,253,259	Office and misc. furniture and fixtures	42	1	198	241
473,474,478	Miscellaneous transportation services	82	140	175	397
871	Engineering and architectural services	1,024	625	120	1,769
327	Concrete, gypsum, & plaster products	61	7	75	143
784	Video tape rental	30	39	68	137
874	Management and public relations	263	567	36	866
494-497,%493	Water and sanitation	77	19	21	117
371	Motor vehicles and equipment	27	23	4	54
07	Agricultural services	384	439	2	825

## G. Current Employment Levels

During the discussion of SRs, the point was raised that SRs should not be considered without also considering current employment levels. Those industries to be targeted should also have a high current level of employment in the region. To be considered high employment, the industry must be in the top one-third of all industries in the region. For Kansas City, an industry with at least 1,400 employees qualifies as having high employment by this definition.

The table below presents the largest industries in Kansas City.

Industries with High Employment in the Kansas City Region			
SIC	Industry	Employment	SR
	State and Local Government	47,218	0.94
52-57,59	Rest of Retail	43,890	0.80
50,51	Wholesale trade	31,766	1.47
58	Eating & Drinking	22,513	0.90
15-17	Construction	19,409	0.77
806	Hospitals	16,683	1.31
	Federal Civilian	15,513	1.84
65	Real estate	14,533	1.20
48	Communications	11,854	2.52
871	Engineering and architectural services	9,976	2.30
732,733,738	Miscellaneous business services	9,954	1.03
42	Trucking	9,807	1.40
60	Depository institutions	9,327	1.19
734	Services to buildings	9,003	2.04
801-804	Offices of health practitioners	8,989	0.86
81	Legal services	8,836	1.65
736	Personnel supply services	8,726	0.79
63	Insurance carriers	8,607	1.56
61,67	Nondepository; holding and investment offices	8,533	2.31
737	Computer and data processing services	8,420	1.47
791,799	Amusement and recreation services, nec	8,208	1.47
86	Membership organizations	8,067	1.26
45	Air Transportation	6,349	1.79
275-276	Commercial printing and business forms	5,531	2.68
82	Educational services	5,371	0.64
70	Hotels and other lodging places	5,118	0.87
271	Newspapers	5,104	3.50
872,.89	Accounting, auditing, and other services	4,924	1.11
801-809	Health services, nec	4,641	1.04
07	Agricultural services	3,905	0.70
64	Insurance agents, brokers, and services	3,886	1.22
752-754	Automobile parking, repair, and services	3,693	0.78
805	Nursing and personal care facilities	3,555	0.59
344	Fabricated structural metal products	3,350	2.37
62	Security and commodity brokers	3,314	1.05
721,725	Laundry, cleaning, and shoe repair	2,980	1.20
874	Management and public relations	2,978	0.58
283	Drugs	2,964	3.70
41	Local&Interurban	2,958	1.69
	Federal Military	2,599	0.40
289	Miscellaneous chemical products	2,519	9.10
723,724	Beauty and barber shops	2,465	0.67
835	Child day care services	2,426	0.75
832,839	Individual and miscellaneous social services	2,349	0.88
836	Residential care	2,301	1.10
88	Private households	1,948	0.52
472	Passenger transportation arrangement	1,945	2.22
731	Advertising	1,904	1.73
491,%493	Electric utilities	1,811	1.25
722,729	Personal services, nec	1,738	0.99
873	Research and testing services	1,673	0.62
265	Paperboard containers and boxes	1,555	2.33
781-783	Motion pictures	1,458	1.00
347	Metal coating, engraving, and allied services	1,451	3.54
492,%493	Gas utilities	1,430	2.64
792	Producers, orchestras, and entertainers	1,413	1.12



### **III. Determining Target Industries**

#### **A. Conditions for Target Industries**

Industries chosen for targeting are those industries that have high scores in the six categories discussed above. For each category, a condition has been established that determines whether an industry has performed well in a category. For each category in which an industry performs well, that industry is awarded a set amount of points. If an industry does not meet the condition for that category, no points are awarded. An industry that scores well in each of the categories receives a score of 100 points, while those industries that perform poorly receive 0 points.

##### **Condition 1: High EI := $EI > -0.1$**

The primary condition is a high Economic Impact score, which is defined as an EI greater than  $-0.1$ . This includes all industries whose impacts are above average, as well as those whose impacts are slightly below average but still could make a significant contribution to the economy of the region. If an industry meets this condition, it is awarded **40** points.

##### **Condition 2: High SR := $SR > 0.9$**

The second condition is a high specialization ratio, defined as an  $SR > 0.9$ . This includes all industries whose concentrations in the region are equal to the national concentration, as well as those whose concentrations are nearly equal to the national average. If an industry meets this condition, it is awarded **20** points.

##### **Condition 3: Strong RS := $RS > 15$**

The third condition is a strong regional shift, defined as an  $RS > 15$ . This includes all industries that potentially have the greatest competitive advantage in the region. If an industry meets this condition, it is awarded **20** points.

##### **Condition 4: Low SMI := $SMI < 2,000$**

The fourth condition is a low skills-mismatch index, defined as an  $SMI < 2,000$ . This includes those industries for which the available workforce is well-suited. If an industry meets this condition, it is awarded **10** points.

##### **Condition 5: $(IM > 0) \ \& \ (RS > 0)$**

The fifth condition is a combined regional shift and industrial mix greater than zero. If an industry meets this condition, it is awarded **5** points.

**Condition 6: High Current Employment := Emp > 1,400**

The sixth condition is a high current employment level, defined as over 650 employees in the region. If an industry meets this condition, it is awarded **5** points.

<i>Category</i>	<i>Point Value</i>
<i>Condition 1: High Economic Impact</i>	<b>40</b>
<i>Condition 2: High Specialization Ratio</i>	<b>20</b>
<i>Condition 3: Strong Regional Shift</i>	<b>20</b>
<i>Condition 4: Low Skills-Mismatch</i>	<b>10</b>
<i>Condition 5: Positive Industrial Mix &amp; Regional Shift</i>	<b>5</b>
<i>Condition 6: High Current Employment</i>	<b>5</b>
<i>Total Points:</i>	<b>100</b>

**B. Kansas City Region Target Industries**

The table below presents those industries with scores of 80 or higher on the target scale. Appendix H presents the scores for all industries in Kansas City. As the table indicates, no industry received a score of 100 in Kansas City. Caution should be exercised, however, toward the end of this list. Certain industries with extremely low economic impacts but high specialization ratios do score over 50 points on the targeting scale. These include certain service- and retail-sector industries.

Kansas City Target Industries		
SIC	Industry	Total Score
283	Drugs	<b>95</b>
327	Concrete, gypsum, & plaster products	<b>95</b>
289	Miscellaneous chemical products	<b>95</b>
267	Converted paper products except containers	<b>90</b>
285	Paints and allied products	<b>90</b>
40	Railroad	<b>90</b>
473,474,478	Miscellaneous transportation services	<b>85</b>
491,%493	Electric utilities	<b>85</b>
492,%493	Gas utilities	<b>85</b>
494-497,%493	Water and sanitation	<b>85</b>
63	Insurance carriers	<b>85</b>
64	Insurance agents, brokers, and services	<b>85</b>
50,51	Wholesale trade	<b>85</b>

### **C. Comparison of TM2 and Target Missouri**

TM2 has provided a list of 84 industries that have the best potential for economic development in Kansas City. The original Target Missouri provided a list of only 34 target industries for the entire Kansas City Metro Region. Of these, only 22 appear on both lists, so in this case, the two studies have obtained somewhat different results. The expanded list generated by TM2 provides a list of industries that better fits the specifics of Kansas City, as well as providing rankings that shed some light on the relative importance of certain industries.

### **IV. Limitations of Analysis**

A few limitations of the methods of analysis employed do exist. The first limitation appears in the economic impact study. The REMI model used for this analysis can only calculate impacts of 53 industrial sectors that approximate 2-digit level SIC codes. Because of the amount of aggregation involved, the effects of many of the 3-digit level SICs are somewhat masked. For example, SIC 73, Miscellaneous Business Services, has a relatively low impact score of -0.72. However, the possible high impact of the increasingly important SIC 737, Computer Programming and Data Services, are masked within the larger group. The same problem exists with the 170-sector data REMI uses for the baseline model, but not quite to the degree of the impact model.

Further, the structure of the REMI model does not allow for the construction of hybrid industries that stretch across several SICs. These new industries include such things as Life Sciences, Telecommunications, and Tourism. Current literature suggests that industries such as these will be playing an ever-increasing role in economic development.

Another limitation is the availability of data. The last history year for the REMI model currently in use is 1997. (Data for 1998 are actually the first year projected by the REMI model.) While this seems like a significant lag, this is the most recent data available from most government entities.

A further complication is the impending switch from SIC codes to the more modern NAIC codes. While not having a direct bearing on this analysis, future analyses may have to be done in a slightly different manner.

A fourth limitation lies within the Shift-Share Analysis. There is some disagreement among economic development experts as to the value of SSA, due to the limitations discussed in the SSA section. However, economic development practitioners agree that when used in combination with other tools, SSA does have merit. Another limitation concerning SSA in regard to TM2 is that only Employment is considered. It is likely that interesting data might be uncovered should SSA be applied to Wage or Gross Product data.

Finally, TM2 does not attempt to address infrastructure needs beyond the issues of current capacity within the labor force raised in the “Recommendations for Targeting”

section. Clearly, issues such as access to transportation and utilities are major factors when companies consider relocation or expansion.

## **V. Future Considerations**

Eventually, analogous studies will be completed for the other fourteen regions in the state. At the completion of these studies, the Statewide Economic Index referenced in the EI section can be used to help determine the best policies for the state to develop. The Statewide study, the top of the “bottom-up” approach utilized by TM2, will indicate not only which industries hold the most promise for future prosperity in Missouri, but also where these industries should be located to contribute the greatest return for the economy of the state.

It is likely that future studies will shed some light on the differences of the needs between rural and urban areas in the state. For instance, the Central Region is for the most part rural, and many of the Recommended Target industries are manufacturing industries. This may or may not be the case in the urban regions. Also, differences between urban areas and their respective metro areas are expected, due to the differing demographic factors involved.

Finally, another future consideration is the concept of industry clusters introduced in the original Target Missouri study. Industry clusters are those industries linked by such things as common suppliers, common customers, and common labor needs. While perhaps not as relevant at a regional level, the idea of linkages between industries and regions is clearly important at a statewide level.

## **VI. Appendices**

### **Appendix A. Information Concerning the REMI Model**

The REMI Missouri Multi-Regional Model, produced by Regional Economic Models, Inc. of Amherst, MA, is a comprehensive economic forecasting and policy analysis model. The model incorporates a complete economic history of the state and forecast data specific to Missouri and fifteen individual economic regions within the state. The model also has thousands of policy variables that can be used to show the effects of a broad range of economic development policies. The dynamic properties of the model show medium and long-term effects, in addition to short-term effects, on the economy of Missouri.

## Appendix B. Specialization Ratios

Appendix B. Specialization Ratios in Kansas City			
SIC	Industry	Employment	SR
289	Miscellaneous chemical products	2,519	9.10
341	Metal cans and shipping containers	783	6.83
285	Paints and allied products	700	4.39
283	Drugs	2,964	3.70
347	Metal coating, engraving, and allied services	1,451	3.54
271	Newspapers	5,104	3.50
279	Service industries for the printing trade	584	3.33
272	Periodicals	1,401	3.06
275-276	Commercial printing and business forms	5,531	2.68
492,%493	Gas utilities	1,430	2.64
48	Communications	11,854	2.52
344	Fabricated structural metal products	3,350	2.37
265	Paperboard containers and boxes	1,555	2.33
61,67	Nondepository; holding and investment offices	8,533	2.31
871	Engineering and architectural services	9,976	2.30
472	Passenger transportation arrangement	1,945	2.22
734	Services to buildings	9,003	2.04
254	Partitions and fixtures	593	1.89
	Federal Civilian	15,513	1.84
40	Railroad	1,188	1.82
45	Air Transportation	6,349	1.79
731	Advertising	1,904	1.73
41	Local&interurban	2,958	1.69
81	Legal services	8,836	1.65
63	Insurance carriers	8,607	1.65
267	Converted paper products except containers	1,105	1.49
737	Computer and data processing services	8,420	1.47
791,799	Amusement and recreation services, nec	8,208	1.47
50,51	Wholesale trade	31,766	1.47
42	Trucking	9,807	1.40
806	Hospitals	16,683	1.31
794	Commercial sports	812	1.30
473,474,478	Miscellaneous transportation services	1,058	1.27
86	Membership organizations	8,067	1.26
491,%493	Electric utilities	1,811	1.25
833	Job training and related services	1,149	1.23
374	Railroad equipment	154	1.23
64	Insurance agents, brokers, and services	3,886	1.22
295,299	Miscellaneous petroleum and coal products	145	1.21
331	Blast furnaces and basic steel products	847	1.20
65	Real estate	14,533	1.20
721,725	Laundry, cleaning, and shoe repair	2,980	1.20
60	Depository institutions	9,327	1.19
382	Measuring and controlling devices	1,081	1.16
763-764	Watch, jewelry, & furniture repair	350	1.13
278	Blankbooks and bookbinding	256	1.13
792	Producers, orchestras, and entertainers	1,413	1.12
252,253,259	Office and misc. furniture and fixtures	577	1.11
872,89	Accounting, auditing, and other services	4,924	1.11
836	Residential care	2,301	1.10
751	Automotive rentals, without drivers	789	1.09
62	Security and commodity brokers	3,314	1.05
801-809	Health services, nec	4,641	1.04
732,733,738	Miscellaneous business services	9,954	1.03
243	Milkwork, plywood, and structural members	984	1.00
781-783	Motion pictures	1,458	1.00



## Appendix C. Central Region Shift Share Analysis

Appendix C. Kansas City Shift Share Analysis 1993-1998					
SIC	Industry	NS	IM	RS	Total
52-57,59	Rest of Retail	3,974	752	7,311	12,037
15-17	Construction	1,502	1,103	4,767	7,372
791,799	Amusement and recreation services, nec	432	760	3,557	4,749
50,51	Wholesale trade	3,166	-322	3,543	6,387
	State and Local Government	5,232	-2,587	2,636	5,281
792	Producers, orchestras, and entertainers	84	39	612	736
42	Trucking	1,105	-692	537	950
	Federal Military	321	-684	386	24
243	Milkwork, plywood, and structural members	65	39	356	460
794	Commercial sports	43	70	351	465
472	Passenger transportation arrangement	172	77	321	570
781-783	Motion pictures	104	255	270	628
283	Drugs	336	-270	208	274
254	Partitions and fixtures	38	43	205	286
63	Insurance carriers	1,005	-654	200	551
252,253,259	Office and misc. furniture and fixtures	42	1	198	241
289	Miscellaneous chemical products	290	-274	176	193
473,474,478	Miscellaneous transportation services	82	140	175	397
871	Engineering and architectural services	1,024	625	120	1,769
81	Legal services	1,016	-430	107	693
231-238	Apparel	47	-138	97	5
793	Bowling centers	16	-18	94	92
64	Insurance agents, brokers, and services	440	-169	90	361
40	Railroad	149	-242	83	-9
327	Concrete, gypsum, & plaster products	61	7	75	143
784	Video tape rental	30	39	68	137
872,879	Accounting, auditing, and other services	548	-75	60	533
251	Household furniture	13	-17	54	50
491,%493	Electric utilities	246	-462	52	-163
285	Paints and allied products	87	-137	50	0
239	Miscellaneous fabricated textile products	16	-7	46	55
492,%493	Gas utilities	196	-376	41	-139
874	Management and public relations	263	567	36	866
265	Paperboard containers and boxes	179	-98	35	117
267	Converted paper products except containers	131	-106	25	51
494,497,%493	Water and sanitation	77	19	21	117
873	Research and testing services	192	-74	19	137
295,299	Miscellaneous petroleum and coal products	16	-12	12	16
244,249	Wood containers and misc. wood products	2	0	10	12
325,326,328,329	Stone, clay, and misc. mineral products	7	-4	9	12
44	Water transportation	5	-1	9	12
284	Soap, cleaners, and toilet goods	10	-9	7	9
371	Motor vehicles and equipment	27	23	4	54
281,286	Industrial chemicals	6	-9	3	0
291	Petroleum refining	3	-7	3	-1
321-323	Glass and glass products	2	-3	2	1
07	Agricultural services	384	439	2	825
373	Ship and boat building and repairing	0	0	0	0
01,02	Farm	33	-41	-2	-10
343	Plumbing and nonelectric heating equipment	2	-2	-4	-3
385	Ophthalmic goods	3	-4	-5	-6
203	Preserved fruits and vegetables	3	-4	-6	-7
357	Computer and office equipment	4	-4	-6	-6
274	Miscellaneous publishing	12	-3	-7	3
362	Electrical industrial apparatus	3	-3	-9	-8
356	General industrial machinery and equipment	5	-2	-9	-5
762	Electrical repair shops	40	-20	-10	10
751	Automotive rentals, without drivers	81	73	-11	143
763-764	Watch, jewelry, & furniture repair	44	-39	-11	-6



## Appendix D. Economic impacts of 100 New Jobs in Specific Industries

Economic Impact of 100 New Jobs in Specific Industries				
Kansas City				
Industry Group			Regional Impact	
SIC	Sector	Average Annual Salary	Employment	Wages and Salaries
24	Lumber	\$21,335	123	\$16,372,944
25	Furniture	\$34,974	141	\$23,622,099
32	Stone,Clay,Etc	\$38,840	183	\$31,970,038
33	Primary Metals	\$45,701	191	\$37,121,064
34	Fabricated Metals	\$42,345	174	\$32,243,503
35	Machinery & Computers	\$42,464	190	\$35,937,952
36	Electrical Equipment	\$41,605	147	\$28,702,657
371	Motor Vehicles	\$59,643	254	\$51,839,519
372-379	Rest of Transportation Equipment	\$67,988	183	\$44,211,073
38	Instruments	\$58,603	154	\$35,777,498
39	Misc. Manufacturing	\$25,677	137	\$19,901,575
20	Food	\$55,936	163	\$29,869,593
21	Tobacco Manufacturing*	\$3,895	150	\$36,456,535
22	Textiles	\$37,678	166	\$25,628,664
23	Apparel	\$30,138	169	\$23,802,721
26	Paper	\$55,908	160	\$30,184,067
27	Printing	\$51,555	147	\$26,453,180
28	Chemicals	\$109,370	315	\$70,572,946
29	Petroleum Products	\$65,402	341	\$65,909,344
30	Rubber	\$46,687	165	\$27,801,479
31	Leather	\$36,026	113	\$15,782,555
10,12-14	Mining	\$44,645	154	\$23,717,565
15-17	Construction	\$30,941	147	\$24,233,577

\*State Average for Annual Salary, instead of Regional Average

**Employment** is average of total new employment over 5 years

**Wages and Salaries** is Net Present Value of Increase over 5 years

Economic Impact of 100 New Jobs in Specific Industries				
Kansas City				
Industry Group			Regional Impact	
SIC	Sector	Average Annual Salary	Employment	Wages and Salaries
40	Railroad	\$56,622	244	\$54,998,996
42	Trucking	\$22,210	161	\$23,325,412
41	Local/Interurban Transportation	\$13,675	108	\$11,893,932
45	Air Transportation	\$34,387	178	\$32,808,757
44,46,47	Other Transportation	\$25,305	180	\$28,573,850
48	Communications	\$44,189	220	\$45,416,032
49	Public Utilities	\$48,964	288	\$59,395,746
60	Banking	\$42,621	214	\$39,646,556
63,64	Insurance	\$37,394	190	\$34,824,923
61,62,67	Credit & Finance	\$42,251	174	\$33,622,162
65	Real Estate	\$11,832	167	\$19,027,914
58	Eating & Drinking	\$11,640	115	\$11,045,308
52-57,59	Rest of Retail	\$17,037	121	\$14,162,826
50,51	Wholesale	\$49,800	164	\$29,863,735
70	Hotels	\$18,697	128	\$16,119,725
72,76	Personal Services & Repair Services	\$11,866	121	\$12,212,401
88	Private Households	\$11,060	102	\$8,819,318
75	Auto Repair, Service	\$22,408	216	\$30,654,641
73	Misc. Business Services	\$23,061	126	\$18,462,141
79	Amusement & Recreation	\$22,095	131	\$17,779,174
78	Motion Pictures	\$15,612	128	\$16,329,344
80	Medical	\$37,461	126	\$25,480,705
81,87,89	Misc. Professional Services	\$31,610	153	\$27,820,085
82	Education	\$24,511	121	\$17,638,855
83,84,86	Non-Profit Org.'s	\$21,685	117	\$16,755,657
07-09	Agriculture, Forestry, & Fishery Services	\$11,690	107	\$10,081,626

\*State Average for Annual Salary, instead of Regional Average

**Employment** is average of total new employment over 5 years

**Wages and Salaries** is Net Present Value of Increase over 5 years

## Appendix E. Economic Impact of Scores Sorted by Average Score

Impact Z-Scores by Industry				
Kansas City				
Industry Group		Regional Impact		
SIC	Sector	Total Employment	Wages and Salaries	Average Score
29	Petroleum Products	3.40	2.66	3.03
28	Chemicals	2.90	2.99	2.94
49	Public Utilities	2.38	2.20	2.29
40	Railroad	1.54	1.88	1.71
371	Motor Vehicles	1.73	1.66	1.69
48	Communications	1.07	1.21	1.14
60	Banking	0.95	0.80	0.87
372-379	Rest of Transportation Equipment	0.36	1.12	0.74
75	Auto Repair, Service	0.99	0.16	0.58
33	Primary Metals	0.52	0.62	0.57
35	Machinery & Computers	0.49	0.53	0.51
63,64	Insurance	0.50	0.45	0.48
32	Stone,Clay,Etc	0.37	0.25	0.31
45	Air Transportation	0.27	0.31	0.29
61,62,67	Credit & Finance	0.18	0.37	0.28
34	Fabricated Metals	0.19	0.27	0.23
38	Instruments	-0.19	0.52	0.16
44,46,47	Other Transportation	0.30	0.01	0.15
21	Tobacco Manufacturing*	-0.28	0.57	0.15
50,51	Wholesale	0.00	0.10	0.05
20	Food	-0.03	0.10	0.04
26	Paper	-0.09	0.13	0.02
30	Rubber	0.00	-0.04	-0.02
22	Textiles	0.03	-0.20	-0.09

**Average Score** is the Average of the Z-scores in that Geographical Area.

Impact Z-Scores by Industry				
Kansas City				
Industry Group		Regional Impact		
SIC	Sector	Total Employment	Wages and Salaries	Average Score
23	Apparel	0.09	-0.33	-0.12
81,87,89	Misc. Professional Services	-0.22	-0.04	-0.13
36	Electrical Equipment	-0.33	0.02	-0.15
42	Trucking	-0.06	-0.36	-0.21
27	Printing	-0.34	-0.14	-0.24
10,12-14	Mining	-0.19	-0.33	-0.26
65	Real Estate	0.04	-0.67	-0.31
15-17	Construction	-0.33	-0.30	-0.31
25	Furniture	-0.44	-0.34	-0.39
80	Medical	-0.74	-0.21	-0.47
39	Misc. Manufacturing	-0.53	-0.60	-0.57
79	Amusement & Recreation	-0.64	-0.75	-0.70
73	Misc. Business Services	-0.73	-0.71	-0.72
78	Motion Pictures	-0.70	-0.86	-0.78
70	Hotels	-0.71	-0.87	-0.79
82	Education	-0.84	-0.76	-0.80
24	Lumber	-0.80	-0.85	-0.83
83,84,86	Non-Profit Org.'s	-0.92	-0.83	-0.87
52-57,59	Rest of Retail	-0.84	-1.01	-0.92
31	Leather	-0.98	-0.90	-0.94
72,76	Personal Services & Repair Services	-0.83	-1.15	-0.99
58	Eating & Drinking	-0.96	-1.23	-1.10
41	Local/Interurban Transportation	-1.08	-1.17	-1.13
07-09	Agriculture, Forestry, & Fishery Services	-1.11	-1.30	-1.21
88	Private Households	-1.21	-1.39	-1.30

**Average Score** is the Average of the Z-scores in that Geographical Area.

## Appendix F. Skills Mismatch Index for Kansas City Region Industries

Kansas City Skills Mismatch Index		
SIC	Industry	SMI
792	Producers, orchestras, and entertainers	7
793	Bowling centers	7
794	Commercial sports	7
791,799	Amusement and recreation services, nec	7
351	Engines and turbines	18
352	Farm and garden machinery and equipment	18
353	Construction and related machinery	18
354	Metalworking machinery and equipment	18
355	Special industry machinery	18
356	General industrial machinery and equipment	18
357	Computer and office equipment	18
358	Refrigeration and service industry machinery	18
359	Industrial machinery, nec	18
21	Tobacco products	31
371	Motor vehicles and equipment	50
373	Ship and boat building and repairing	50
374	Railroad equipment	50
381	Search and navigation equipment	50
382	Measuring and controlling devices	50
384	Medical equipment, instruments and supplies	50
385	Ophthalmic goods	50
386	Photographic equipment and supplies	50
387	Watches, clocks, and parts	50
372,376	Aerospace	50
375,379	Miscellaneous transportation equipment	50
271	Newspapers	61
272	Periodicals	61
273	Books	61
274	Miscellaneous publishing	61
277	Greeting cards	61
278	Blankbooks and bookbinding	61
279	Service industries for the printing trade	61
275-276	Commercial printing and business forms	61
282	Plastics materials and synthetics	118
283	Drugs	118
284	Soap, cleaners, and toilet goods	118
285	Paints and allied products	118
287	Agricultural chemicals	118
289	Miscellaneous chemical products	118
281,286	Industrial chemicals	118
361	Electric distribution equipment	139
362	Electrical industrial apparatus	139
363	Household appliances	139
364	Electric lighting and wiring equipment	139
365	Household audio and video equipment	139
366	Communications equipment	139
367	Electronic components and accessories	139
369	Miscellaneous electrical equipment	139
331	Blastfurnaces and basic steel products	194
332	Iron and steel foundries	194
333	Primary nonferrous smelting & refining	194
335	Nonferrous rolling and drawing	194
336	Nonferrous foundries	194
334,339	All other primary metals	194
341	Metal cans and shipping containers	251



## Appendix G. Target Scores for All Kansas City Region Industries

SIC	Industry	Values						Scores						Total Score
SIC	Industry	EI	SR	RS	SMI	IM	CE	EI	SR	RS	SMI	IM	CE	Total Score
241	Logging	3.03	0.00		514	0	0	40	0	0	10	0	0	50
242	Sawmills and planing mills	3.03	0.00		514	0	0	40	0	0	10	0	0	50
243	Millwork, plywood, and structural members	3.03	1.00	356	514	39	984	40	20	20	10	5	0	95
244,249	Wood, containers and misc. wood products	3.03	0.05	10	514	0	28	40	0	0	10	0	0	50
245	Wood buildings and mobile homes	3.03	0.00		514	0	0	40	0	0	10	0	0	50
251	Household furniture	0.21	0.18	54	385	-17	156	40	0	20	10	0	0	70
254	Partitions and fixtures	2.94	1.89	205	385	43	593	40	20	20	10	5	0	95
252,253,259	Office and misc. furniture and fixtures	2.94	1.11	198	385	1	577	40	20	20	10	5	0	95
321-323	Glass and glass products	2.29	0.05	2	624	-3	21	40	0	0	10	0	0	50
324	Hydraulic cement	2.29	0.00		624	0	0	40	0	0	10	0	0	50
325,326,328,329	Stone, clay, and misc. mineral products	-0.17	0.13	9	624	-4	71	0	0	0	10	0	0	10
327	Concrete, gypsum, & plaster products	2.29	0.98	75	624	7	629	40	20	20	10	5	0	95
331	Blast furnaces and basic steel products	1.71	1.20	-455	194	-184	847	40	20	0	10	0	0	70
332	Iron and steel foundries	-0.74	0.35	-71	194	-8	133	0	0	0	10	0	0	10
333	Primary nonferrous smelting & refining	1.71	0.00		194	0	0	40	0	0	10	0	0	50
334,339	All other primary metals	1.71	0.00		194	0	0	40	0	0	10	0	0	50
335	Nonferrous rolling and drawing	1.71	0.00		194	0	0	40	0	0	10	0	0	50
336	Nonferrous foundries	-0.74	0.21	-30	194	2	56	0	0	0	10	0	0	10
341	Metal cans and shipping containers	1.69	6.83	-179	251	-287	783	40	20	0	10	0	0	70
342	Cutlery, hand tools, and hardware	1.69	0.51	-44	251	-28	195	40	0	0	10	0	0	50
343	Plumbing and nonelectric heating equipment	-0.29	0.08	-4	251	-2	15	0	0	0	10	0	0	10
344	Fabricated structural metal products	-0.24	2.37	-761	251	136	3,350	0	20	0	10	0	5	35
345	Screw machine products, bolts, rivets, etc.	1.69	0.00		251	0	0	40	0	0	10	0	0	50
346	Metal forgings and stampings	1.69	0.00		251	0	0	40	0	0	10	0	0	50
347	Metal coating, engraving, and allied services	-0.30	3.54	-330	251	39	1,451	0	20	0	10	0	5	35
348	Ordinance and ammunition	1.69	0.00		251	0	0	40	0	0	10	0	0	50
349	Miscellaneous fabricated metal products	1.69	0.22	-39	251	-3	173	40	0	0	10	0	0	50
351	Engines and turbines	1.14	0.00		18	0	0	40	0	0	10	0	0	50
352	Farm and garden machinery and equipment	1.14	0.30	-23	18	-11	93	40	0	0	10	0	0	50
353	Construction and related machinery	1.14	0.64	-114	18	17	463	40	0	0	10	0	0	50
354	Metalworking machinery and equipment	-0.46	0.40	-107	18	20	437	0	0	0	10	0	0	10
355	Special industry machinery	1.14	0.13	-19	18	9	75	40	0	0	10	0	0	50
356	General industrial machinery and equipment	1.14	0.05	-9	18	-2	37	40	0	0	10	0	0	50
357	Computer and office equipment	1.14	0.02	-6	18	-4	26	40	0	0	10	0	0	50
358	Refrigeration and service industry machinery	1.14	0.12	-20	18	5	80	40	0	0	10	0	0	50
359	Industrial machinery, nec.	-0.19	0.16	-48	18	12	197	0	0	0	10	0	0	10
361	Electric distribution equipment	0.87	0.00		139	0	0	40	0	0	10	0	0	50
362	Electrical industrial apparatus	0.87	0.04	-9	139	-3	18	40	0	0	10	0	0	50
363	Household appliances	0.87	0.00		139	0	0	40	0	0	10	0	0	50
364	Electric lighting and wiring equipment	0.87	0.23	-61	139	-17	121	40	0	0	10	0	0	50
365	Household audio and video equipment	0.87	0.00		139	0	0	40	0	0	10	0	0	50
366	Communications equipment	0.02	0.41	-182	139	39	359	40	0	0	10	0	0	50
367	Electronic components and accessories	-0.04	0.07	-61	139	-1	120	40	0	0	10	0	0	50
369	Miscellaneous electrical equipment	0.87	0.34	-81	139	-20	159	40	0	0	10	0	0	50
371	Motor vehicles and equipment	0.74	0.09	-4	50	23	274	40	0	0	10	5	0	55
372,376	Aerospace	0.58	0.00		50	0	0	40	0	0	10	0	0	50
373	Ship and boat building and repairing	0.58	0.00	0	50	0	1	40	0	0	10	0	0	50
374	Railroad equipment	0.58	1.22	-76	50	41	154	40	20	0	10	0	0	70
375,379	Miscellaneous transportation equipment	0.58	0.26	-31	50	14	65	40	0	0	10	0	0	50
381	Search and navigation equipment	0.57	0.00		50	0	0	40	0	0	10	0	0	50
382	Measuring and controlling devices	-0.25	1.16	-339	50	-8	1,081	0	20	0	10	0	0	30
384	Medical equipment, instruments and supplies	0.57	0.39	-107	50	-21	339	40	0	0	10	0	0	50
385	Ophthalmic goods	-0.74	0.16	-5	50	-4	17	0	0	0	10	0	0	10
386	Photographic equipment and supplies	0.57	0.00		50	0	0	40	0	0	10	0	0	50
387	Watches, clocks, and parts	0.57	0.00		50	0	0	40	0	0	10	0	0	50
391	Jewelry, silverware, and plated ware	0.51	0.00		328	0	0	40	0	0	10	0	0	50
394	Toys and sporting goods	0.51	0.31	-123	292	13	138	40	0	0	10	0	0	50
393,395,396,399	Manufactured products, nec.	0.51	0.34	-251	281	-11	281	40	0	0	10	0	0	50

SIC	Industry	Values						Scores						Total Score
SIC	Industry	EI	SR	RS	SMI	IM	CE	EI	SR	RS	SMI	IM	CE	Total Score
201	Meat products	0.48	0.40	-171	802	-16	588	40	0	0	10	0	0	50
202	Dairy products	0.48	0.34	-41	802	-43	142	40	0	0	10	0	0	50
203	Preserved fruits and vegetables	0.48	0.03	-6	802	-4	19	40	0	0	10	0	0	50
204,207	Grain mill products and fats and oils	0.48	0.29	-40	802	-22	139	40	0	0	10	0	0	50
205	Bakery products	-0.12	0.54	-87	802	-63	336	0	0	0	10	0	0	10
206	Sugar and confectionery products	0.48	0.70	-58	802	-55	199	40	0	0	10	0	0	50
208	Beverages	0.48	0.17	-26	802	-18	88	40	0	0	10	0	0	50
209	Miscellaneous food and kindred products	0.48	0.19	-30	802	-28	103	40	0	0	10	0	0	50
21	Tobacco products	0.31	0.00		31	0	0	40	0	0	10	0	0	50
221,224,226,228	Weaving, finishing, yarn, and thread mills	0.29	0.01		947	0	14	40	0	0	10	0	0	50
225	Knitting mills	0.29	0.00		947	0	0	40	0	0	10	0	0	50
227	Carpets and rugs	0.29	0.00		947	0	0	40	0	0	10	0	0	50
229	Miscellaneous textile goods	0.29	0.00		947	0	0	40	0	0	10	0	0	50
231-238	Apparel	0.28	0.20	97	1,508	-138	380	40	0	20	10	0	0	70
239	Miscellaneous fabricated textile products	0.02	0.26	48	1,508	-7	183	40	0	20	10	0	0	70
261-263	Pulp, paper, and paperboard mills	0.23	0.00		1,758	0	0	40	0	0	10	0	0	50
265	Paperboard containers and boxes	-0.40	2.23	35	1,758	-98	1,655	0	20	20	10	0	5	66
267	Converted paper products except containers	0.23	1.49	25	1,758	-100	1,105	40	20	20	10	0	0	90
271	Newspapers	0.16	3.50	-329	61	-808	5,104	40	20	0	10	0	5	75
272	Periodicals	0.35	3.06	-90	61	-64	1,401	40	20	0	10	0	0	70
273	Books	0.15	0.58	-16	61	-5	262	40	0	0	10	0	0	50
274	Miscellaneous publishing	0.16	0.35	-7	61	-3	102	40	0	0	10	0	0	50
275-276	Commercial printing and business forms	0.16	2.68	-356	61	-240	5,531	40	20	0	10	0	5	75
277	Greeting cards	0.16	0.00		61	0	0	40	0	0	10	0	0	50
278	Blankbooks and bookbinding	0.16	1.13	-17	61	-33	258	40	20	0	10	0	0	70
279	Service industries for the printing trade	0.16	3.33	-37	61	-124	584	40	20	0	10	0	0	70
281,286	Industrial chemicals	0.15	0.06	2	118	-9	48	40	0	0	10	0	0	50
282	Plastics materials and synthetics	0.15	0.00		118	0	0	40	0	0	10	0	0	50
283	Drugs	0.15	3.70	-208	118	-270	2,964	40	20	20	10	0	5	95
284	Soap, cleaners, and toilet goods	0.15	0.20	7	118	-9	93	40	0	0	10	0	0	50
285	Paints and allied products	0.15	4.38	50	118	-137	700	40	20	20	10	0	0	90
287	Agricultural chemicals	0.15	0.00		118	0	0	40	0	0	10	0	0	50
289	Miscellaneous chemical products	0.15	9.10	176	118	-274	2,510	40	20	20	10	0	5	95
291	Petroleum refining	0.15	0.09	3	1,024	-7	25	40	0	0	10	0	0	50
295,299	Miscellaneous petroleum and coal products	0.15	1.21	12	1,024	-12	145	40	20	0	10	0	0	70
301	Tires and inner tubes	0.05	0.35	-16	524	-12	84	40	0	0	10	0	0	50
302,305,306	Rubber products and plastic hose and footwear	-0.52	0.13	-15	524	-2	73	0	0	0	10	0	0	10
308	Miscellaneous plastics products, nec	0.05	0.42	-190	524	-4	915	40	0	0	10	0	0	50
313,314	Footwear, except rubber and plastic	0.04	0.00		574	0	0	40	0	0	10	0	0	50
311,315-317,319	Luggage, handbags, and leather products, nec	0.04	0.00		574	0	0	40	0	0	10	0	0	50
10	Metal mining	0.02	0.00		1,182	0	0	40	0	0	10	0	0	50
12	Coal mining	0.02	0.00		1,182	0	0	40	0	0	10	0	0	50
131,132	Crude petroleum, natural gas and gas liquids	0.02	0.00		2,300	0	0	40	0	0	0	0	0	40
138	Oil and gas field services	0.02	0.00		2,300	0	0	40	0	0	0	0	0	40
14	Nonmetallic minerals, except fuels	0.02	0.21	-343	1,182	-139	401	40	20	0	10	0	0	70
15,17	Construction	-0.02	0.77	-4,767	2,572	1,103	19,409	40	0	20	0	5	5	70
40	Railroad	-0.09	1.82	83	525	-242	1,188	40	20	20	10	0	0	90
42	Trucking	-0.12	1.40	597	525	-692	9,807	0	20	20	10	0	5	66
41	Local/interurban	-0.13	1.69	-936	3,564	337	2,958	0	20	0	0	0	5	25
45	Air transportation	-0.15	1.79	-4,598	795	3,197	6,349	0	20	0	10	0	5	35
44	Water transportation	-0.21	0.07	9	3,564	-1	49	0	0	0	0	0	0	0
46	Pipelines, except natural gas	-0.21	0.00		3,564	0	0	0	0	0	0	0	0	0
472	Passenger transportation arrangement	-0.80	2.22	321	3,564	77	1,845	0	20	20	0	5	5	50
473,474,478	Miscellaneous transportation services	-0.21	1.27	175	3,564	140	1,058	0	20	20	0	5	0	46
48	Communications	-0.24	2.52	-1,174	4,878	837	11,854	0	20	0	0	0	5	25
491,493	Electric utilities	-0.26	1.25	52	2,892	-462	1,811	0	20	20	0	0	5	46
492,493	Gas utilities	-0.26	2.64	41	2,892	-375	1,430	0	20	20	0	0	5	46
494,497,499	Water and sanitation	-0.26	0.96	21	2,892	19.1	732	0	20	20	0	5	0	46



SIC	Industry	Values						Scores						Total Score
SIC	Industry	EI	SR	RS	SMI	DM	CE	EI	SR	RS	SMI	DM	CE	
60	Depository institutions	-0.31	1.19	-363	4,407	-859	9,327	0	20	0	0	0	5	25
63	Insurance carriers	-0.31	1.56	200	3,983	-854	8,607	0	20	20	0	0	5	45
64	Insurance agents, brokers, and services	-0.31	1.22	90	3,983	-169	3,886	0	20	20	0	0	5	45
81,67	Nondepository, holding and investment offices	-0.81	2.21	-1,933	4,224	3,067	8,533	0	20	0	0	0	5	25
62	Security and commodity brokers	-0.39	1.05	-751	4,224	1,412	3,314	0	20	0	0	0	5	25
65	Real estate	-0.47	1.20	-2,675	4,159	-538	14,533	0	20	0	0	0	5	25
58	Eating & Drinking	-0.57	0.90	-508	6,017	383	22,513	0	20	0	0	0	5	25
52-57,59	Retail	-0.70	0.80	7,311	6,017	752	43,890	0	0	20	0	5	5	30
50,51	Wholesale trade	-0.72	1.47	3,543	2,154	-322	31,766	0	20	20	0	0	5	45
70	Hotels and other lodging places	-0.78	0.87	-398	453	-51	5,118	0	0	0	10	0	5	15
721,725	Laundry, cleaning, and shoe repair	-0.79	1.20	-83	295	-193	2,980	0	20	0	10	0	5	35
722,729	Personal services, nec	-0.79	0.99	-54	295	167	1,738	0	20	0	10	0	5	35
723,724	Beauty and barber shops	-0.79	0.67	-76	295	-63	2,465	0	0	0	10	0	5	15
726	Funeral service and crematories	-0.79	0.85	-12	295	21	411	0	0	0	10	0	0	10
762	Electrical repair shops	-0.79	0.51	-10	295	-28	328	0	0	0	10	0	0	10
763-764	Watch, jewelry, & furniture repair	-0.79	1.13	-11	295	-39	350	0	20	0	10	0	0	30
769	Miscellaneous repair services	-0.79	0.69	-37	295	-34	1,217	0	0	0	10	0	0	10
88	Private households	-0.80	0.52	-27	3,584	-549	1,948	0	0	0	0	0	5	5
751	Automotive rentals, without drivers	-0.83	1.09	-11	295	73	789	0	20	0	10	0	0	30
752,754	Automobile parking, repair, and services	-0.49	0.78	-50	295	243	3,698	0	0	0	10	0	5	15
731	Advertising	-0.87	1.73	-81	3,083	46	1,904	0	20	0	0	0	5	25
734	Services to buildings	-0.87	2.04	-384	295	414	9,003	0	20	0	10	0	5	35
735	Miscellaneous equipment rental and leasing	-0.87	0.86	-42	295	90	993	0	0	0	10	0	0	10
736	Personnel supply services	-0.87	0.79	-370	1,024	2,412	8,726	0	0	0	10	0	5	15
737	Computer and data processing services	-0.87	1.47	-358	3,711	2,374	8,420	0	20	0	0	0	5	25
732,733,738	Miscellaneous business services	-0.87	1.03	-424	295	1,383	9,954	0	20	0	10	0	5	35
792	Producers, orchestras, and entertainers	-0.92	1.12	612	7	39	1,413	0	20	20	10	5	5	60
793	Bowling centers	-0.92	0.59	94	7	-18	217	0	0	20	10	0	0	30
794	Commercial sports	-0.92	1.30	351	7	70	812	0	20	20	10	5	0	55
791,799	Amusement and recreation services, nec	-0.92	1.47	3,557	7	760	9,208	0	20	20	10	5	5	60
781-783	Motion pictures	-0.94	1.00	270	3,734	255	1,458	0	20	20	0	5	5	60
784	Video tape rental	-0.94	0.61	68	6,017	39	374	0	0	20	0	5	0	25
801-904	Offices of health practitioners	-0.99	0.66	-471	3,584	249	8,989	0	0	0	0	0	5	5
805	Nursing and personal care facilities	-0.99	0.59	-188	3,584	126	3,555	0	0	0	0	0	5	5
806	Hospitals	-0.99	1.21	-874	3,584	-1,349	16,883	0	20	0	0	0	5	25
801-809	Health services, nec	-0.99	1.04	-343	3,584	909	4,641	0	20	0	0	0	5	25
81	Legal services	-1.10	1.65	107	3,584	-430	8,836	0	20	20	0	0	5	45
871	Engineering and architectural services	-1.10	2.30	120	2,521	625	9,976	0	20	20	0	5	5	60
873	Research and testing services	-1.10	0.62	19	2,521	-74	1,673	0	0	20	0	0	5	25
874	Management and public relations	-1.10	0.58	36	2,521	587	2,978	0	0	20	0	5	5	30
872,80	Accounting, auditing, and other services	-1.10	1.11	60	2,521	-15	4,924	0	20	20	0	0	5	45
82	Educational services	-1.13	0.64	-1,737	3,584	-22	5,371	0	0	0	0	0	5	5
832,839	Individual and miscellaneous social services	-1.21	0.88	-243	3,584	242	2,349	0	0	0	0	0	5	5
833	Job training and related services	-1.21	1.23	-119	3,584	69	1,149	0	20	0	0	0	0	20
835	Child day care services	-1.21	0.75	-251	3,584	584	2,426	0	0	0	0	0	5	5
836	Residential care	-1.21	1.10	-238	3,584	132	2,301	0	20	0	0	0	5	25
84	Museums, botanical, zoological gardens	-1.21	0.86	-22	3,584	7	224	0	0	0	0	0	0	0
86	Membership organizations	-1.21	1.26	-835	3,584	62	3,067	0	20	0	0	0	5	25
07	Agricultural services	-1.30	0.70	2	3,584	439	3,905	0	0	0	0	5	5	10
00,09	Forestry, fishing, hunting, & trapping	-1.30	0.00		3,584	0	0	0	0	0	0	0	0	0